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Appln. No. 08/232,36

ASYNCHRONOUS VIDEO EVENT AND TRANSACTION DATA
TECHNIQUE
MULTIPLEXING TECHNIC FOR SURVEILLANCE SYSTEMS

FIELD OF THE INVENTION

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5 This invention relates to surveillance systems that record transaction events for review at a later date. More specifically, this invention relates to an asynchronous video event and transaction data multiplexing ^{technique} ~~technic~~ for such a surveillance system.

BACKGROUND OF THE INVENTION

The use of surveillance systems to record cash transactions for later review are well known in the art. For example, U.S. Patent No. 4,337,482, to Coutta, discloses a surveillance system that monitors and records transactions that occur at a number of cashier lanes. In Coutta, a single television camera, mounted on a rail, can be positioned to make a video recording of the transactions that occur at a single selected cashier lane. Coutta discloses that the digital transaction data from the cash register in the selected cashier lane is fed into a video character generator to provide a composite video picture in which an alphanumeric display of the transaction data overlays the video image of the transaction. Since a composite video image is generated with respect to only one cashier lane, it is usually possible to position the camera so that the alphanumeric overlay does not obscure a useful portion of the recorded video image. However, if a single camera is used to record simultaneously the transactions that occur at a plurality of cashier lanes, it is likely that the alphanumeric overlay data will obscure an important part of the video image of at least one of the transaction lanes. This likelihood is further increased when a large number of parameters are displayed simultaneously for all of the cashier lanes.

In U.S. Patent No. 4,630,110, to Cotton et al., a surveillance system is disclosed which monitors and records the single lane from a plurality of video cameras. In one embodiment of Cotton et al. the video image from four cameras are combined, with two of the cameras being focused on cash registers. Cotton et al. discloses that textual data can be displayed at the lower portion of the combined video picture.

Another surveillance system disclosed in U.S. Patent No. 4,145,715, to Clever, generates two levels of surveillance records. The first level, generated by a tape recorder, contains a record of all transactions. The second level generated on the tape recorder contains only selected transactions. In Clever, transaction data such as the price and department number are input to a character generator. The character generator output is mixed with the video image to create a composite video frame. This composite video frame consists of alphanumeric transaction data which overlays the transaction video image. This composite video frame is then recorded by the video tape recorder onto video tape.

Although Clever discloses that a single camera can be used to scan several point-of-sale (POS) stations, the video image that is generated contains alphanumeric transaction data that is permanently overlaid on the video image. This is because the composite video frame is generated before

recording on video tape. This overlay can degrade the clarity of the resultant video images if the transaction data is placed over the video image corresponding to a particular cashier lane. Alternatively, a portion of the video may be blacked out so that the transaction data can be more easily read when viewed at a later time on the monitor. In this instance, the blacked out portion is recorded over a portion of the image being recorded by the television camera. In this situation, the portion of the video image which was blacked out is lost forever.

As the devices that perform data entry (cash registers, data terminals, optical character readers, radio frequency readers, magnetic media readers, etc.) become more sophisticated, larger quantities of alphanumeric characters describing the transaction are generated. The increase in information would further tend to clutter and obscure the composite video image. As the number of lanes being recorded increases, it becomes more difficult to overlay all of the alphanumeric transaction data at positions that will not obscure an important part of the video transaction image. The clarity of the video image of a transaction is particularly important when the transaction lanes are outdoors and are recorded under varying light and weather conditions.

In my earlier patent, No. 5,216,502, the transaction data and video pictures of the transaction behavior are

recorded synchronously but separately on media capable of storing a full motion video.

5 The aforementioned patents require that the transaction data be available at the time that the behavior is being recorded. However, there are certain applications where this technology cannot be applied. For example, in situations where the point-of-sale system buffers the transaction data until the termination of the transaction, or at the termination of several transactions. At the end
10 of the transaction, the data is transmitted from the terminal to the host. Accordingly, the transaction information cannot be recorded synchronously with the video pictures of the transaction.